



Serial ATA Supplemental Design Guide

Supplement ID	003
Applicable Spec.	1.0 Gold

Submission info

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Description of design guidance

Scrambling of the serial stream is used in Serial ATA to help reduce emissions. Serial ATA's scrambling involves two separate and distinct scramblers. One is employed on FIS payloads, and the other is used following the CONT primitive to reduce the occurrence of repeated primitive streams. The scrambling activity not only obscures the actual traffic over the interface impacting observability, but there is also a risk that a mis-interpretation of the scrambling definition could result in devices failing to communicate sufficiently to allow initial implementations to be debugged/validated.

In order to improve testability/observability of initial designs and to help mitigate risk it is recommended that implementations include a means of disabling scrambling of the transmitted and received data in order to revert to an unscrambled stream. Having the ability to disable scrambling also provides a means for measuring the EMI/RFI benefits of the Serial ATA scrambling scheme.

Supplemental Information

Hosts and devices should provide a vendor-specific means of disabling the transmission/reception of scrambled data. Three independent controls are recommended – one to disable the scrambling of transmitted FIS payload data, the second to disable the CONT/junk method of repeated primitive suppression, and the third to disable the unscrambling of received FIS payload data.

Using the scrambling disable capabilities is intended for testability and design debug, and not recommended as an end-user feature. It is the responsibility of the engineer/operator to ensure that both ends of the cable are configured in such a way that the host and device can communicate (i.e. if scrambled transmission is disabled on the device then scrambled reception must be disabled on the host). Devices that disable payload scrambling may not interoperate with other devices that do not implement this recommendation. Systems that disable scrambling may not meet EMI regulatory requirements.

Disposition log

10/23/2001	Submitted for review
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